

Claim 1. As shown in FIG. 3 and described in column 3, lines 32-37, *Manteghi* teaches exposing the bonding wire (16) to an oxygen plasma to form an insulating coating (25) of aluminum or copper oxide. A plasma is not a liquid as alleged by the rejection. As defined in elementary physics, a plasma is an ionized gas. Specifically, the oxygen plasma disclosed in *Manteghi* is not a liquid as alleged by the rejection. Also, the aluminum or copper oxide formed as a result of the reaction of the oxygen plasma with the bonding wire (16) is a well known solid, not a liquid. Because neither the oxygen plasma nor the oxide coating is a liquid, the rejection fails to arrive at the insulating liquid recited in Claim 1.

Further, *Manteghi* shows in FIG. 1 and explains at column 3, lines 15-21, that the bonding wire (16) is bonded ultrasonically at the bonding pad (18) and the package lead (24) before the insulating coating (25) is formed in FIG. 3. Because the bonding wire (16) is already bonded at both ends before the insulating coating (25) is formed, there is no motivation to draw the bonding wire (16) through a bond tool while coating the bonding wire (16). In fact, there is no bond tool mentioned in *Manteghi* as alleged by the rejection. Because *Manteghi* does not teach or suggest drawing the bonding wire (16) through a bond tool while coating the bonding wire (16), the rejection fails to establish *prima facie* obviousness of Claim 1 under 35 U.S.C. § 103(a) as explained at MPEP § 2143.03:

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). 'All words in a claim must be considered in judging the patentability of that claim

against the prior art.' *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)."

Clearly the claim limitation recited in Claim 1 of drawing the bonding wire through a bond tool while coating the bonding wire with an insulating liquid is not taught or suggested in *Manteghi*.

The rejection further errs in failing to explain how modifying *Manteghi* with the encapsulant in *Marrs* could arrive at the claimed invention of insulating a bonding wire while drawing the bonding wire through a bond tool as recited in Claim 1. In Claim 1, the bonding wire is drawn through the bond tool from the bond pad to the package lead while coating the bond wire with an insulating liquid. If the encapsulant in *Marrs* is injected before drawing the bonding wire through the bond tool, then the limitation of coating the bonding wire while drawing the bonding wire would not be met. If the encapsulant in *Marrs* is injected after drawing the bonding wire through the bond tool, then the limitation of coating the bonding wire while drawing the bonding wire would not be met. If the encapsulant in *Marrs* is injected while the bond tool is drawing the bonding wire, then injecting the encapsulant onto the bond tool would clearly interfere with the bond tool. Specifically, the encapsulant would flow onto the package lead before the bond tool attempted to attach the bonding wire, thereby rendering *Manteghi* unsuitable for its intended purpose. Because neither *Manteghi* nor *Marrs* teach or suggest drawing the bonding wire (16) through a bond tool while coating the bonding wire (16) with an insulating liquid as recited in Claim 1, and because the modification proposed by the rejection of *Manteghi* by *Marrs* fails to arrive at the claimed invention, Claim 1 is not obvious under 35 U.S.C. §

103(a).

Further, *Manteghi* teaches away from the claimed invention in column 1, lines 22-38 as follows:

"One technique provides insulation on the wires prior to wire bonding. Insulating the bonding wires prior to bonding created problems ..."

Using this so-called 'wet' technique, the sprayed silicone material can get on the leadframe or substrate on which the die is mounted ...

Consequently, a need exists for a dry technique ..."

*Manteghi* thus teaches not only away from insulating the bonding wires prior to bonding, but also away from using liquid insulating materials in favor of dry techniques. In contrast to *Manteghi*, Claim 1 includes drawing the bonding wire through a bond tool toward a package lead (to be bonded to the package lead in a later step) while coating the bonding wire with an insulating liquid. Because *Manteghi* teaches away from insulating the bonding wires prior to bonding and away from coating the bonding wires with an insulating liquid as disclosed and claimed in Claim 1, there is no motivation to combine *Manteghi* and *Marrs* as suggested by the rejection. Because there is no motivation to combine the references, and because the modification proposed by the rejection fails to arrive at the claimed invention, Claim 1 is not obvious under 35 U.S.C. § 103(a).

Regarding the rejection of Claim 2, the rejection errs in alleging that *Manteghi* in view of *Marrs* discloses the claimed insulating liquid. As explained above, *Manteghi* specifically teaches away from liquid insulating materials in favor of dry techniques, therefore there is no motivation to

combine *Marrs* with *Manteghi*.

Regarding the rejection of Claim 3, the rejection errs in alleging that *Manteghi* in view of *Marrs* discloses attaching the claimed bonding wire to the claimed package lead after coating the bond wire. As shown by *Manteghi* in FIG. 1 and explained at column 3, lines 15-21, the bonding wire is bonded ultrasonically at both ends, that is, to the bonding pad (18) and the package lead (24), before the insulating coating (25) is formed in FIG. 3. Clearly the bonding wire (16) in *Manteghi* is already bonded to the package lead (24) before the step of forming the insulating coating (25) in FIG. 3, not afterward as recited in Claim 3. Because *Manteghi* does not teach or suggest attaching the bonding wire (16) to the package lead (24) after the insulating coating (25) is formed, the rejection fails to arrive at the claimed step recited in Claim 3 of attaching the bonding wire to the package lead after coating the bonding wire with an insulating liquid. Because the combination of *Manteghi* and *Marrs* proposed by the rejection fails to arrive at the claimed invention, Claim 3 is not obvious under 35 U.S.C. § 103(a).

Regarding the rejection of Claims 4 and 5, the rejection errs in alleging that *Manteghi* in view of *Marrs* discloses solidifying the claimed insulating liquid. As explained above, *Manteghi* specifically teaches away from liquid insulating materials in favor of dry techniques, therefore there is no motivation to combine *Marrs* with *Manteghi*. Because there is no motivation to combine *Manteghi* with *Marrs* to arrive at the claimed invention, Claims 4 and 5 are not obvious under 35 U.S.C. § 103(a).

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No prior art considered pertinent to the subject application was made of record that was not relied upon, therefore no such prior art was considered in this response.

Conclusion

In summary, Applicant submits that the rejection of Claims 1-5 fails to arrive at the claimed invention as required by patent law according to MPEP § 2143.03, and that *Manteghi* teaches away from the combination of *Manteghi* and *Marrs* proposed by the rejection. Because the rejection fails to arrive at the claimed invention and because no motivation for the modification proposed by the rejection exists, Applicant requests that the rejection be withdrawn.

No fee is required for this amendment.

In view of the above, Applicant submits that Claims 1-5 and 12-17 are in condition for allowance, and prompt and favorable action is earnestly solicited.

Respectfully submitted,

  
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